

## Nursing Procedures in Polyneuropathic Patient

### Procedury pielęgniarские u pacjenta polineuropatycznego

Katarzyna Krystyna Snarska<sup>1</sup>, Cecylia Dolińska<sup>2</sup>, Monika Chorąży<sup>3</sup>

① Faculty of Health Sciences, Medical University of Białystok, Poland

② Higher School of Medicine in Białystok, Poland

③ Department of Neurology, Medical University of Białystok, Poland

#### Abstract

**Introduction.** Polyneuropathy is a condition where multiple sensory and motor nerves are damaged, leading to the development of a number of nuisances. These ailments can, in the long run, lead to a significant reduction in the comfort of our lives. Nurses can have a significant impact on the long-term impact of the disease on the patient through education, support and counseling.

**Aim.** The aim is to illustrate the nature of the problem of polyneuropathy and the importance of care activities in the therapeutic process.

**Case Report.** The presented case study shows a 77-year-old man suffering from type 2 diabetes and polyneuropathy for 17 years. Information about his state of health was obtained on the basis of his own observations, the nurse's case history, the analysis of the patient's medical records. The Barthel scale was used to assess the patient's independence. The assessment of the severity of pain was carried out using the NRS scale.

**Conclusions.** Polyneuropathy is a chronic disease with intensifying symptoms that affect daily life by entangling the underlying disease unit. (JNNN 2022;11(1):31–38)

**Key Words:** nurse care, polyneuropathy

#### Streszczenie

**Wstęp.** Polineuropatia to stan dotyczący uszkodzenia wielu nerwów czuciowych i ruchowych prowadzi do rozwoju szeregu uciążliwych dolegliwości. Te dolegliwości mogą na dłuższą metę doprowadzić do znacznego ograniczenia komfortu naszego życia. Pielęgniarki mogą mieć znaczący wpływ na długofalowe oddziaływanie choroby na pacjenta poprzez edukację, wsparcie i poradnictwo.

**Cel.** Przedstawienie istoty problemu jakim jest polineuropatia, a także znaczenie działań pielęgnacyjnych w procesie terapeutycznym.

**Opis przypadku.** Przedstawione studium przypadku obrazuje 77-letniego mężczyznę, chorującego przez 17 lat na cukrzycę typu 2 i polineuropatię. Informacje o jego stanie zdrowia uzyskano na podstawie własnych obserwacji, historii przypadku pielęgniarki, analizy dokumentacji medycznej pacjenta. Do oceny niezależności pacjenta wykorzystano skalę Barthela. Ocenę nasilenia bólu przeprowadzono za pomocą skali NRS.

**Wnioski.** Polineuropatia jest przewlekłą chorobą z nasilającymi się objawami, które wpływają na codzienne życie wklajając podstawową jednostkę chorobową. (PNN 2022;11(1):31–38)

**Słowa kluczowe:** opieka pielęgniarська, polineuropatia

## Introduction

### Characteristics of Neuropathy

Polyneuropathy is the syndrome of clinical symptoms resulting from the damage of peripheral nerves. This dysfunction may involve motor, sensory and autonomic fibers. Two types are distinguished — symmetrical damage of peripheral nerves and nonsymmetrical damage, called multifocal mononeuropathy [1].

Polyneuropathy is characterized by its various etiology. Causes of polyneuropathy include autoimmunological processes, genetic predispositions, metabolic disorders, toxic factors and infections. Thus, huge influence on the frequency of occurrence of polyneuropathy have: alcohol abuse, malnutrition, hypertension, drugs (e.g.: Talidomid, Bortezomib), neoplasms or amyloidosis [2]. However, the most common co-morbidity which leads to polyneuropathy is diabetes. It regards both, patients with type 1 and type 2 of the disease. Epidemiological data indicate that polyneuropathy occurs in 10% to 90% of patients suffering from diabetes. The stage of the disease and the frequency of occurrence of this complication is increasing among with age and the duration of diabetes. In children it occurs very rarely and regards only 2% of cases, while in adults with recently recognized diabetes, the frequency of occurrence is 7.5% and increases to 50% after 25 years of the disease. The main cause of polyneuropathy connected with diabetes is a state of chronic hyperglycemia. It leads to demyelination of peripheral nerves which causes disorders in Schwann cells function. Also cases where the cause of polyneuropathy remains undetermined are observed. In such cases it is called idiopathic polyneuropathy [3–5].

### Diagnosis of Polyneuropathy

Due to many causes of polyneuropathic syndrome, the diagnostics must be based on the information gathered during medical history, as well as on neurological and electrophysiological examinations. It is important to determine the cause of polyneuropathy. Following types are distinguished: acute, subacute, relapse-progressive, increasing and chronic. The main issue, included in case history, necessary to recognize polyneuropathy are symptoms and their type. It is determined whether motor symptoms are dominating, sensory or autonomic and if their distribution is distal-ascending, proximal, multifocal symmetrical or asymmetrical. Further important element of case history is information if patient was exposed to toxic agents or drugs bringing the risk of peripheral nerves damage. Considering the danger of symptoms connected with dysfunction of autonomic system also the presence of vegetative disorders has to

be determined. Those disorders include: faints, dizziness, heart function disorders, orthostatic decreases of blood pressure, diarrhea, constipation, difficult deuration, sexual disorders, lack of sweating, accommodation disorders and double vision [4,5]. In patients with polyneuropathy, the increase of tremor threshold is observed, subsequently on feet, hands and head. Recently, in the assessment of thick and thin fibers function neurometer is used. The intensity of electric stimulus sensation is an information indicating the damage of thick or thin fibers damage. In terms of precise diagnostics, the level of feet warming should be determined as well as muscle dystrophy, trophic changes and nail damages. Recognition of at least two abnormalities in neurological examination allows to diagnose peripheral neuropathy in 87% of cases [2,4,6]. Crucial role in the diagnostics of polyneuropathy plays electrophysiological examination. It is dedicated to the assessment of latence, the speed of impulse conduction in sensory and motor nerves, the extent of the process and enables determination of damage pathophysiology (axonopathy/myelinopathy) along with recognition which fibers are damaged [2,5]. Next to the assessment of sensory and motor conduction, electrophysiological examination includes also muscle electromyography (EMG) [4,7]. There are cases when electrophysiological examination does not confirm polyneuropathy. The explanation for this phenomenon may be neuropathy of thin nerve fibers, according to the fact that standard examination analyses conduction in thick fibers with myelin sheath and it is inadequate for the assessment of polyneuropathy in thin unmyelinated fibers. Sometimes the symptoms which confusingly suggest polyneuropathy may be the cause of spinal cord diseases or hypokalemia [5].

The most invasive method of polyneuropathy diagnosis is nerve fiber biopsy (usually — calf) and skin biopsy with the assessment of minor nerve fibers distribution. Whereas, noninvasive, modern method of polyneuropathy diagnosis is microscopic assessment of corneal nerve (Corneal Confocal Microscopy — CCM). It enables precise determination of damage or regeneration of the nerve which may be connected with the advancement of the damage or regeneration of peripheral nerves [2,8].

### Clinical Image of Polyneuropathy

Clinical image of polyneuropathy, regardless its etiology, reveals some common features and presents three groups of symptoms: motor, sensory and autonomic (vegetative).

When motor fibers are damaged, unilateral and bilateral flaccid paresis occurs, including mainly hands and forearms as well as feet and shins. In such cases

patients report longterm weakness, difficulty walking, moving and getting up (Gowers symptom). Frequently, balance and vision disorders are also observed. Vision dysfunction is a consequence of dropping eyelid and diplopia — double vision. The symptom coexisting with the damage of motor fibers is muscle dystrophia and lack of deep reflexes. Those symptoms in the majority of cases regard erector muscle of lower limb which is confirmed by the fact that first of all, walking on heels is deteriorated and subsequently walking on toes is disturbed. Motor symptoms are dominant in acute and subacute demyelinating polyneuropathies, genetic and in the course of porphyria [4,5,9,10].

In dysfunction of sensory fibers following symptoms are mainly observed: pain, paresthesia and sensation disorders in distal parts of limbs (feet, hands) of, so called, ‘glove-and-stocking’ character [2].

Neuropathic pain is a basic clinical problem in patients with polyneuropathy. It is described as a penetrating, burning, stinging, ripping especially intense in resting at night. Patients report symmetrical spontaneous or paroxysmal pain. Medical staff has recently many tests and scales enabling recognition and monitoring of neuropathy course, which include McGill pain questionnaire as well as visual analog scales (VAS) [2,11].

Paresthesia, called “awry sensation” is obnoxious sensation, not connected with pain, occurring without the evident stimulus. Patients describe it as a tingling, numbness, burning or pressure [5,12].

There is a huge differentiation within sensory disorders connected with disturbed sensory stimuli perception. The symptom could be the loss of ability to receive particular modalities of stimuli which is a so called deficit symptoms or hyperesthesia when the damage of fibers lead to intensified sensation of stimuli [5,13].

Separate disorder in patients with polyneuropathy is restless leg syndrome (RLS). This disorder manifests with resting motor anxiety with the necessity to make a move with a limb. Immobility causes intensified necessity to activate a limb [10,14].

Sometimes, patients with polyneuropathy also reveal motor disorders such as syndrome of “painful legs and moving toes”. It is characteristic especially for demyelinating polyneuropathies as well as genetic polyneuropathies with hypersensitivity for pressure [10].

Autonomic symptoms significantly deteriorate life prognosis. Disorders such as: arrhythmia, myocardial ischemia, reduction of the minute reserve as a result of resting tachycardia and sleep apnea attacks are huge risk for sudden death. Remaining autonomic symptoms are connected with trophic skin changes, sweating disorders and vasomotor changes (e.g. Quincke edema) [9,15].

Objective recognition of autonomic system damage is possible with uncomplicated bedside tests. Activity of sympathetic nervous system is assessed with classic

orthostatic test — Schellong test — basing on the value of arterial blood pressure measured after standing from lying position. Function of parasympathetic nervous system is assessed on the basis of the heart rate in response to the Valsalva maneuver, which requires dynamic exhalation with closed glottis [7,14].

### Types of Polyneuropathy

Different divisions and classifications of polyneuropathy are distinguished in clinical practice. According to San Antonio guidelines, neuropathy may be clinically evident, where physical symptoms are present with different intensity as well as pathologies in neurological and electrophysiological examination are observed. Clinically latent neuropathy occurs when neurological diagnosis does not reveal subjective and objective symptoms but disorders are visible in neurophysiological tests [4,10].

1. Classification according to the dominant clinical symptoms:
  - a. sensory polyneuropathy with predominance of sensory disturbances,
  - b. motor polyneuropathy with predominance of motor disorders,
  - c. autonomic polyneuropathy with predominance of autonomic disorders,
  - d. mixed polyneuropathy [14].
2. Classification according to the location of changes and the extent of damage:
  - a. symmetrical polyneuropathies (e.g. in the course of diabetes),
  - b. mononeuropathy — damage to one nerve (e.g. carpal tunnel syndrome),
  - c. multifocal mononeuropathy — asymmetric dysfunction of many nerves (e.g. in the course of multiple myeloma) [10].
3. Classification according to the primary pathological process which occurs in the nerve fiber:
  - a. axonal degeneration — primary damage to the body of the nerve cell and axon (e.g. in the course of uremia),
  - b. segmental demyelination — secondary (risk of decay of the entire nerve fiber) or primary (with relative axon sparing) damage to the myelin sheath (e.g. in Guillain–Barré syndrome) [10].

In chronic polyneuropathies, partial nerves regeneration is possible. The return to the physical fitness after axonal degeneration is not fast and total, whereas after demyelination degeneration is faster and more complex [7].

The most general classification of polyneuropathy is its division into acquired and genetic [10].

Polyneuropathies may also be divided due to pathogenes:

1. Metabolic neuropathies:
  - a. diabetic,
  - b. alcohol,
  - c. uremic [7].
2. Toxic neuropathies:
  - a. arsen,
  - b. thallium,
  - c. drug-induced [7].
3. Autoimmunological neuropathies:
  - a. Guillain–Barré syndrome,
  - b. post-tetanus polyneuropathy,
  - c. multifocal motor neuropathy [7,8].

### **Conventional and Unconventional Methods of Polyneuropathy Treatment**

The basis for the treatment of polyneuropathy is compensation of underlying disease disorders. The most crucial is non-pharmacological treatment, such as, patient education, psychological counsel, all rehabilitation procedures, gymnastics strengthening muscles as well as shoes and orthopedic equipment application.

Rehabilitation has a complex character. Important in the prophylaxis of complications is kinesitherapy influencing positively the process of upright standing, gait learning and strengthening of weak muscles. Passive exercises are applied, active off-loading exercises, active exercises with resistance and specialistic methods [9].

During the treatment patient also uses individually selected medical equipment such as: crutches, orthopedic splints for lower limbs, AFO orthopedic splints, standing frames and parapodia etc. Rehabilitation program includes also occupational therapy, applied for the practical, functional use of the acquired skills of the patient [9].

Important element of rehabilitation of patients with polyneuropathy are physical therapy procedures. Mainly, electrostimulation, cathodic galvanization, magnetic field of high and low frequency in proportion adequate for the duration of the disease as well as phototherapy which includes laser, infrared and ultraviolet radiation. Beneficial for the nutrition of tissues is also classical, water and whirl massage [9].

Pharmacological treatment includes causal and symptomatic treatment [6,12].

Unconventional treatment includes methods which therapeutic effect was not confirmed or documented. Non-standard therapy methods used in polyneuropathy are, among others, low-frequency magnetic field, electrostimulation (TENS, HFMS), acupuncture [16].

### **Educational Role of Nurse in Polyneuropathy Treatment**

Educational role of nurse is based most of all on health promotion and making patients aware how to expand their knowledge as well as control of their own health. Among educational methods, following are distinguished: informative, motivating and behavioral [4].

The most important task of connecting aforementioned methods is to ease as much as it is possible the acquaintance of knowledge for patients as well as abilities to maintain quality of life on the highest level despite different obstacles caused by the disease [8].

Aim:

1. Assessment of physical and mental condition of patients with polyneuropathy.
2. Assessment of knowledge about the disease.
3. Determination of nursing problems and individual nursing process for patient.
4. Development of the recommendations for further nursing care.

### **Case Report**

77-years-old patient, D.H., admitted to the Department of Neurology on a scheduled basis, due to persistent pain and exteroceptive sensation disorders of feet. Patient suffers from type 2 diabetes for 17 years, and ailments within feet for 5 months. He claims that every month the pain becomes stronger, and currently it is 8–9 points in NRS scale. The pain is burning with the periods of tingling. Patient highlights that the pain is stronger at night and wakes him up.

Patient is retired, lives with his wife in Łapy, living conditions are very good according to him. Patient drinks alcohol occasionally and for 50 years smokes 15 cigarettes a day. He is not physically active, has type I obesity (BMI: 32 kg/m<sup>2</sup>). The patient is conscious, the contact is logical, has partial memory loss. His mood is lowered, he is irritated by the ailments and anxious about his stay in hospital. Patient often suffers from headaches, especially in occipital area. Patient is myopic and uses corrective glasses. Hearing is normal. Condition of oral cavity is normal, patient wears complete removable denture. Resting breathing is normal, but patient complains from dyspnoea during walking up the stairs and longer walks. Patient does not follow diabetic diet, eats excessive amounts of sweets, salt and animal fats. Huge discomfort for the patient is involuntary urinary incontinence. Skin is clean, dry, without visible pathological changes. Patient complains for frequent falls during independent walking.



Case history with the family indicates that the patient is the first case of diabetes in the family. It also reveals that patient rarely is depressed, that he is cheerful and open person, however, he feels fear and anxiety connected with hospitalization.

Patient does not report any allergies, was vaccinated against hepatitis B, his blood type is 0Rh(+). He takes on regular basis medication as: Metformin, Glipizide, Losartan, Kaptopryl, Lovastatinum.

On admission to the hospital, the following parameters were measured:

- blood pressure: 160/95 mmHg,
- heart rate: 70 bpm,
- temperature: 36.5°C,
- breaths: 15/min,
- glycemia: 220 mg/dl.

Patient co-morbidities: type I obesity, hypertension, hypercholesterolemia, urinary incontinence, osteoporosis.

History of surgical interventions: cholecystectomy in 1990, inguinal hernia surgery 1996.

During hospitalization, electromyography (EMG) and electroneurography were conducted towards polyneuropathy. Basing on conducted examinations, reduction of the speed of impulse conduction and lowering the amplitude of the potential in sensory fibers was stated.

### Individual Process of Nursing a Patient with Polyneuropathy

#### **Problem 1: Discomfort Caused by Chronic Pain in the Feet**

Purpose of nursing care: Reduction of pain.

Nursing interventions:

1. Assessment of pain intensity using NRS scale.
2. Determination which activities or factors increase the pain and what is its nature (burning, pressing).
3. Observation of vital signs (blood pressure, pulse, breathing, temperature, skin color, trophic changes).
4. Distract the patient from pain, for example by providing a conversation or turning on the TV.
5. Administering painkillers (e.g. ketonal) at the doctor's request.
6. Observation of the effectiveness of the administered drugs and the patient's body response.

Assessment: Patient rates a pain reduction of 4–5 points on NRS scale.

#### **Problem 2: Patient's Mental and Physical Discomfort Caused by Persistent Urinary Incontinence**

Purpose of nursing care: Improvement of patient comfort.

Nursing interventions:

1. Education of the patient about the effects of regular urination on urinary incontinence.
2. Establishment of patient's activities, in which urinary incontinence occurs.
3. Providing the patient with easy access to the toilet (placing him in a room in close proximity to the toilet or in a room with direct access to it).
4. Advising the patient to use adult diapers.
5. Providing the patient with clean underwear and bedding.
6. Observation of the urethral area towards infection.
7. Control of the patient's personal hygiene and help with hygienic activities.
8. Talking to the patient leading to acceptance of the disease and elimination of the embarrassment associated with it.
9. Administering medications to reduce the symptoms (e.g. Oxybutynin) at the doctor's request.

Assessment: Patient understands the essence of regular urination, and the nursing activities performed increased his mental and physical comfort.

#### **Problem 3: Patient Risk of Hypo- and Hyperglycaemia**

Purpose of nursing care: Reduction patient's risk of hypo- and hyperglycaemia.

Nursing interventions:

1. Education of the patient about effects and causes of hypo- and hyperglycemia.
2. Regular glycemia measure and its documentation in observational sheet of the patient.
3. Observation of the patient towards hypo- and hyperglycemic conditions.
4. Administration of adequate dose of insulin depending on the result of blood sugar level.
5. Supplementation of sweet beverage or candy when patient's condition suggests hypoglycemia.

Assessment: Patient understands the importance of glycemia control. Lack of symptoms of hypo- and hyperglycaemia in the patient.

#### **Problem 4: Frequent Headaches due to Hypertension**

Purpose of nursing care: Elimination of pain resulting from arterial hypertension.

Nursing interventions:

1. Education of patient about the influence of body mass on blood pressure and occurrence of cardiovascular disease.
2. Recommendation of salt and fat products reduction.
3. Vital parameters control (blood pressure, pulse, breath, temperature).

4. Keeping the patient calm.
5. Aggregation of activities performed in front of patient.
6. Administration of hypotensive drugs (e.g. Furosemid) or painkillers (e.g. Paracetamol) at the doctor's request.

Assessment: The headaches subsided.

### **Problem 5: Patient's Dyspnea Appearing During Exercise**

Purpose of nursing care: Improvement of the quality of patient's breathing.

Nursing interventions:

1. Vital parameters control (blood pressure, pulse, breath, temperature).
2. Observation of patient's skin color towards cyanosis.
3. Administration of oxygen at doctor's request.
4. Recommendation of half-sitting position.
5. Administration of bronchodilators (e.g. Berodual).
6. Airing of patient's room when needed.
7. Motivation of patient to quit smoking.
8. Education on how to adjust physical effort to health condition.

Assessment: The problem requires further observation to improve patient's breathing quality. The patient does not show willingness to fight the addiction.

### **Problem 6: Type I Obesity Caused by Poor Eating Habits**

Purpose of nursing care: Changing eating habits of the patient.

Nursing interventions:

1. Education of patient about the influence of nutrition on complications of type 2 diabetes.
2. Encouraging the patient to physical activity; presentation of passive and active exercises.
3. Assuring the patient equipment to ease motility (e.g. orthopedic crutches, walking frame).
4. Recommendation for patient's family to encourage and accompany him during walks to increase his sense of security.

Assessment: The patient did not change his eating habits, but shows a greater willingness to exercise.

### **Problem 7: Risk of Falling Due to Impaired Sensation**

Purpose of nursing care: Reduction of the risk and ensuring patient safety.

Nursing interventions:

1. Ensuring that patient uses well-fitted shoes with rubber, anti-slip soles.
2. Motivating the patient to use family's help during longer walks.
3. Recommendation for the family to adjust the place of living to patient's needs (e.g. removing of carpets, protection of edges).
4. Ensuring patient the equipment enabling safe walking (walking frame, orthopedic crutches, cane).
5. Proposition of physiotherapeutical consultation.

Assessment: The patient did not consult a physiotherapist. Patient's family undertook to adapt the apartment to his needs.

### **Problem 8: Patient's Irritation by Waking up Frequently in the Middle of the Night**

Purpose of nursing care: Achieving sleep continuity and improving patient's well-being

Nursing interventions:

1. Instructing the patient to refrain from sleeping during the day.
2. Providing the patient with peace and quiet at night.
3. Suggesting that the patient stop drinking coffee in the evening.
4. Supply of sleeping drugs on the recommendation of a doctor.
5. Observation of the effectiveness of administered drugs.

Assessment: The patient wakes up less often during the night and his well-being has improved.

### **Problem 9: Patient's Depressed Mood Due to Illness and Hospitalization**

Purpose of nursing care: Improving mental condition of the patient.

Nursing interventions:

1. Aggregation of activities performed in front of the patient.
2. Accurate informing the patient about activities that are performed in front of him.
3. To familiarize the patient with the topography of the ward and the medical team.
4. Talking to the patient frequently about his well-being and show him interest.
5. Providing patient peace.
6. Supply of sedative medications ordered by a doctor (e.g. relanium).

7. Evaluation of the effectiveness of the administered drugs.

Assessment: Patient's mood improved.

### **Problem 10: Lack of Skills and Knowledge about Proper Feet Care**

Purpose of nursing care: Supplementation of patient's knowledge and acquisition of skills in proper feet care.

Nursing interventions:

1. Overview of the principles of daily feet care (washing with water at room temperature, thorough drying, cutting nails).
2. Explaining the importance of moisturizing and observing the skin of the feet on a daily basis.
3. Explanation how to treat small wounds (e.g. patches should not be applied to damaged skin).
4. Recommendation to use shoes with rounded fronts, made of natural materials, with breathable inserts.
5. Verification of the patient's knowledge on proper feet care.

Assessment: The patient has sufficient knowledge in the field of foot care.

### **Problem 11: Patient's Deficit of Knowledge About Polyneuropathy and Diabetes Late Complications**

Purpose of nursing care: Education of the patient about polyneuropathy and diabetes late complications.

Nursing interventions:

1. Talking about the causes, course, symptoms and treatment of polyneuropathy.
2. Providing patients with brochures and leaflets on late diabetes complications.
3. Education towards methods of preventing the aggravation of polyneuropathy.

Assessment: The patient has knowledge of polyneuropathy and diabetes late complications.

### **Problem 12: Insufficient Knowledge of the Patient about the Principles of Healthy Eating and a Diabetic Diet**

Purpose of nursing care: Informing the patient about the principles of healthy eating and a diabetic diet.

Nursing interventions:

1. Education of patient about the impact of implementing diabetic diet.
2. Information about the importance of regular meals, at certain times throughout the day.

3. Providing an inventory of recommended, contraindicated and food that the patient can consume in fixed amounts.

4. Education about the complications that occur as a result of unhealthy eating.

5. Proposing a sample menu for one day.

Assessment: Patient lacks of knowledge about healthy eating and diabetic diet. Education in this field should be continued.

### **Problem 13: Deficit of Patient's Knowledge about the Negative Impact of Cigarettes Smoking on His Health**

Purpose of nursing care: Supplementation of patient's knowledge and motivation to quit the addiction.

Nursing interventions:

1. Education on the harmful effects of cigarette smoking on the health of the patient and people around him.
2. Information about the benefits of quitting smoking.
3. Encourage the use of chewing gums or anti-smoking patches.
4. Suggesting that you seek help at a smoking cessation clinic.

Assessment: The patient is aware of the harmful effects of tobacco smoke, but is not willing to quit.

Recommendations for further care:

1. Following dietetic recommendations, substitution of simple carbohydrates with complex carbohydrates, reduction of animal fats, salt and sweets consumption, regular meals, avoiding alcohol and cigarettes.
2. Physical activity for at least 30 minutes/a day (walks, passive or active exercises with the help of family).
3. Constant control of body mass.
4. Everyday, regular measure of blood glycemia and blood pressure.
5. Adequate care for feet and observation of all changes.

## **Conclusions**

1. Polyneuropathy is a chronic disease, frequently accompanying patient through all his life. Its symptoms are troublesome and usually disturb patient's everyday functioning which is why it is important to treat both, causes and symptoms of polyneuropathy.
2. As a result of research methods used, patient's problems were revealed connected with diabetic

polyneuropathy. Individual nursing program was created which includes all backgrounds of patient's problems. They are a result of main disease and treatment undertaken.


## Implications for Nursing Practice

Important role in nursing of patient with diabetic polyneuropathy plays adequate information provided for patient on the prevention of late complications of diabetes as well as information how to maintain healthy lifestyle and improve physical fitness. This is why it is important to create recommendations in order to increase the quality of life of patient with polyneuropathy.

## References

- [1] Ciszewska A.I., Janecki M., Copija A., Nowakowska-Zajdel E. Obwodowa polineuropatia indukowana leczeniem przeciwnowotworowym jako problem kliniczny. *Med Paliat.* 2017;9(4):204–209.
- [2] Samojedna-Kobosz A., Wieliczko E., Pabis M., Wojtyna A. Postępowanie rehabilitacyjne w polineuropatiach. *Post Rehab.* 2004;18(3):15–17.
- [3] Ostrowska M., Kułaga A., Trąbka-Janik E., Szczudlik A. Kliniczna i elektrofizjologiczna charakterystyka pacjentów przyjmowanych do szpitala z podejrzeniem polineuropatii. *Prz Lek.* 2011;68(11):1112–1116.
- [4] Rokicka D., Wróbel M., Szymborska-Kajaneck A., Bożek A., Strojek K. Bólowa polineuropatia cukrzycowa — diagnostyka i możliwości terapeutyczne. *Diabet Klin.* 2012;1(1):25–32.
- [5] Zalecenia kliniczne dotyczące postępowania u chorych na cukrzycę 2009. Stanowisko Polskiego Towarzystwa Diabetologicznego. *Diabetol Dośw Klin.* 2009;9(Supl. A).
- [6] Kostera-Pruszczyk A. Objawy naśladujące zespół niespokojnych nóg w polineuropatiach. *Aktual Neurol.* 2005;5(1):35–38.
- [7] Sobańska A. Diagnostyka różnicowa zaburzeń czucia. *Neurologia po Dyplomie.* 2013;8(1):34–44.
- [8] Krzemińska S. Polineuropatie. *Świat Farmacji.* 2009;5: 23–25.
- [9] Drac H. Ostra zapalna polineuropatia demielinizacyjna i aksonalna — zespół Guillaina–Barrégo. *Pol Przegl Neurol.* 2009;5(2):61–67.
- [10] Banach M. Wieloogniskowa neuropatia ruchowa. W: Losy J., Selmaj K. (Red.), *Neuroimmunologia kliniczna.* Wyd. Czelej, Lublin 2007;123–134.
- [11] Witek P. Algorytmy postępowania w neuropatii cukrzycowej. *Diabet Prakt.* 2009;10(5):186–195.
- [12] Ziegler D. Treatment of diabetic neuropathy and neuropathic pain: how far have we come? *Diabetes Care.* 2008;31(Suppl 2):S255–261.
- [13] Dębska G., Rogala-Pawelczyk G., Zięba E. Projekt edukacji chorego z zespołem stopy cukrzycowej oparty na teorii Dorothy Orem. *Piel Zdr Publ.* 2012;2(1):57–65.
- [14] Korzon-Burakowska A., Adamska K., Skuratowicz-Kubica A., Jaworska M., Świerblewska E., Kunicka K. Wpływ edukacji na parametry wyrównania cukrzycy i jakość życia chorych na cukrzycę typu 2 leczonych insuliną. *Diabet Prakt.* 2010;11(2):46–53.
- [15] Markiewicz I., Cebulak M. Sprawność funkcjonalna pacjentów objętych domową długoterminową opieką pielęgniarską. *Probl Pielęg.* 2014;22(1):42–51.
- [16] Cepuch G., Wordliczek J., Golec A. Wybrane skale do badania natężenia bólu u młodzieży — ocena ich przydatności. *Pol Med Paliatywna.* 2006;5(3):108–113.


### Corresponding Author:

Katarzyna Krystyna Snarska 

Department of Clinical Medicine,  
Medical University of Białystok, Poland  
Szpitalna 37 street, 15-295 Białystok, Poland  
e-mail: khajduczek@wp.pl

**Conflict of Interest:** None

**Funding:** None

**Author Contributions:** Katarzyna Krystyna Snarska<sup>A, C-E, G, H</sup>, Cecylia Dolińska<sup>A-C, F, H</sup>, Monika Chorąży<sup>D-F, I</sup> 

A — Concept and design of research, B — Collection and/or compilation of data, C — Analysis and interpretation of data, D — Statistical analysis, E — Writing an article, F — Search of the literature, G — Critical article analysis, H — Approval of the final version of the article, I — Acquisition of assets [eg financial]

**Received:** 27.01.2022

**Accepted:** 17.02.2022